



Agenda

UNCLASSIFIED

Frontiers in Nuclear Detection Workshop

Study Center, Jemez/Cochiti Conference Rooms

February 10 & 11, 2010

Wednesday, February 10, 2010

8:00 Welcome and Introductions Michael J. Burns
Deputy Principal Associate Director, Global Security

8:25 Meeting Format and Objectives Dan J. Thoma
Institute Director, Materials Design
Export Control Review Dan N. Holden
Global Security, Nuclear Nonproliferation

Session 1: National Needs and Program Context.....Session Chair — John J. Szymanski

8:30 Countering Nuclear Terrorists: Some Perspectives from DoD Peter J. Turchi
Physics

9:00 Nonproliferation and International Security Program Kory Budlong-Sylvester
Global Security, Nuclear Nonproliferation

9:30 DNDOD/RNEGS Program Opportunities Gregory J. Van Tuyle
Global Security, Countering Weapons of Mass Effect

10:00 Break

10:15 Overview for Fundamental Physics of Nuclear Detection Bill Johnson
Decision Applications, Nuclear Design and Risk Analysis

10:45 Panel Discussion

11:30 Break (Retrieve pre-paid lunches in Lobby)

11:40 Lunch Speaker - Treaties Joseph F. Pilat
National Security Office

Session 2: Detection Technology.....Session Chair — Nancy Jo Nicholas

12:10 Needs in the Border Security World Mark E. Abhold
Nuclear Nonproliferation, Safeguards Science and Technology

12:35 “Classical” Safeguards Needs Martyn T. Swinhoe
Nuclear Nonproliferation, Safeguards Science and Technology

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1:05	Microcalorimetry	Michael W. Rabin <i>International, Space & Response, Space and Remote Sensing</i>
1:20	Break	
1:40	He-3 Shortage Review, Why it is Bad for Safeguards Neutron NDA	David H. Beddingfield <i>Nuclear Nonproliferation, Safeguards Science and Technology</i>
2:00	3He Replacement Project from NA 24 Funded	Howard O. Menlove <i>Nuclear Nonproliferation, Safeguards Science and Technology</i>
2:15	Developments in Detector Electronics that Support New Materials and/or Old Materials used Differently	Martyn T. Swinhoe <i>Nuclear Nonproliferation, Safeguards Science and Technology</i>
2:30	Panel Discussion with Program Managers at Otowi Cafeteria Side Rooms <i>Participants walk to Otowi Cafeteria Side Rooms A, B, and C</i>	
2:45	Discussions with Program Managers <ul style="list-style-type: none">• William "Bill" Priedhorsky, LDRD• Daniel N. Holden, Proliferation Detection Program• John J. Szymanski, Nuclear Nonproliferation• Gregory J. Van Tuyle, Countering Weapons of Mass Effect• Garth Reader, Event Response• James E. Koster, Nuclear Counterterrorism• Paul G. Weber, Nonproliferation and Verification Research and Development• Julia Whitworth, Off-Site Source Recovery• Kory Budlong-Sylvester, Nonproliferation and International Security Program• Douglas R. Mayo, Treaties and Verification• Noah Pope, Global Threat Reduction• Phil Hypes, Safeguard Support for the International Atomic Energy Agency (IAEA)• Neil R. Brown, Civilian Nuclear Program Office	
4:30	Session Ends	

Thursday, February 11, 2010

	Session 3: Algorithms and Analysis	Session Chair — Francis "Frank" J. Alexander
8:00	Simulations for Active Interrogations.....	Laurie S. Waters <i>Decision Applications, Innovative Design and Analysis of Nuclear Systems</i>
8:30	Large-Scale, Fast Functional Models of Visual Cortex for Nuclear Proliferation Detection	Steven P. Brumby <i>International, Space & Response, Space and Remote Sensing</i>
9:00	Data Mining in Radiation Portal Monitoring.....	Thomas L. Burr <i>Computer, Computational, and Statistical Sciences, Statistical Sciences</i>
9:30	Break	

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Session 4: New Materials and Concepts in Nuclear Detection Session Chair — Dan J. Thoma

- 9:40 Overview Ross E. Muenchausen
Materials Science and Technology, Polymers and Coatings
- 10:25 Interesting Detection Materials Ideas Ernst I. “Shorty” Esch
Nuclear Nonproliferation, Safeguards Science and Technology
- 10:30 Inexpensive Boron Detectors for Neutrons Zhehul “Jeff” Wang
Physics, Plasma Physics
..... Christopher Morris
Physics, Subatomics Physics
- 10:35 ⁶Li Polycrystalline Ceramic Neutron Detection Ching-Fong “Chris” Chen
Materials Science and Technology, Materials Technology-Metallurgy
- 10:40 Radiation Detection Using Bulk Nanostructures Alexander H. Mueller
Chemistry, Chemical Diagnostics and Engineering
- 10:45 Design of Composite Materials for Radiation Detection Robert D. Gilbertson
Polymers and Coatings
- 10:50 Composite Materials for Radiation Detection Thomas “Mark” McCleskey
Materials Physics and Applications, Materials Chemistry
..... Anthony K. “Tony” Burrell
Materials Physics and Applications, Materials Chemistry
..... Quanxi Jia
Materials Physics and Applications, Center for Integrated Nanotechnologies
- 10:55 Break
- 11:00 Theoretical Issues with Nuclear Detection Matthias J. Graf
Theoretical, Physics of Condensed Matter and Complex Systems
..... Darryl L. G. Smith
Theoretical, Physics of Condensed Matter and Complex Systems
- 11:05 Detection Schemes for the Uranium and Plutonium Content of a Reactor Anna C. Hayes-Sterbenz
Theoretical, Nuclear and Particle Physics, Astrophysics and Cosmology
- 11:10 Characterization Capabilities for New Detector Materials Edward A. McKigney
Nuclear Nonproliferation, Safeguards Science and Technology
- 11:15 Next Generation Scintillators Todd J. Haines
Physics, Neutron Science & Technology
- 11:20 Industrial Partnerships in Nuclear Detection Erica A. Sullivan
Technology Transfer
- 11:25 Proton Interrogation of Uranium Objects Steven J. Greene
Physics, Subatomic Physics
- 11:30 Break (Retrieve pre-paid lunches Lobby)

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11:45 Lunch Speaker William “Bill” Priedhorsky
Lab Directed Research & Development

Session 5: Robustness and System Integration.....Session Chair – Michael J. Weaver

12:30 Thirty Years of What Can Go Wrong Bill Johnson
Decision Applications, Nuclear Design and Risk Analysis

1:00 Nuclear Detection Figures of Merit Phillip D. Stroud
Decision Applications, Risk Analysis and Decision Support Systems

1:30 Testing and Evaluation James W. Toevs
Nuclear Proliferation, International Threat Reduction

2:00 Workshop Adjourns

Participants in Session 6, walk to Research Park, Suite 300, Conference Room 301

Session 6: A Road Map for Nuclear Detection Session Chair – Daniel N. Holden

2:30 Session chairs present summaries from their sessions; brain storming session led by session chairs with key questions
Session 1: National Needs and Program Context John J. Szymanski
Session 2: Detection Technology Nancy Jo Nicholas
Session 3: Algorithms and Analysis Francis “Frank” J. Alexander
Session 4: New Materials and Concepts in Nuclear Detection Dan J. Thoma
Session 5: Robustness and System Integration Michael J. Weaver